

bushes? Among the Composites, where are hosts of difficulties, appellatives will be welcomed for *Minuria*, *Vittadinia*, *Podolepis*, *Leptorrhynchos*, and others, as also for the members of the Epacrid and the orchid family. Many other queries might be put, but these are perhaps sufficient to indicate where assistance is most needed, and will, it is hoped, have some effect in so stimulating the energies of members that quite a crop of suggestions will soon be available to enable this most important work of plant naming to be brought to an early completion.—C. S. SUTTON, Hon. Sec. Plant Names Sub-Committee.

NEW AND RARE AUSTRALIAN BUTTERFLIES OF THE GENUS MILETUS.

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IN the "Transactions of the Entomological Society of London" for 1891, Mr. H. H. Druce published a monograph of the then known species of this beautiful genus, under the generic name *Hypochrysops*. Since that date many new species have been described, the greater number by Grose Smith in the "Rhopalocera Exotica." Two new Australian species were described and the others listed by one of us in the "Proceedings Linnean Society, New South Wales," 1903. We have now to make known three more beautiful forms, and to give a full description of the lately re-discovered, strikingly handsome *Miletus apollo*.

Druce (*l.c.*) divides the genus into three sections, with the following characters and typical species:—

Section I.—Costa of fore-wing arched: veins 2 and 3 of hind-wing produced to blunt tails. *M. polycletus*.

Section II.—Apex of fore-wing pointed; hind-wing more produced at tornus than at apex. *M. ignita*.

Section III.—Costa of fore-wing arched: hind-wing more produced at apex than at tornus. *M. theon*.

For the present we are allowing *Miletus apollo* to remain in this genus, though we have no doubt it will be removed when the family is again monographed; it needs a fourth section.

Section IV.—Costa of fore-wing almost straight; hind-wing more produced at tornus than at apex, veins 1 and 2 produced to blunt tails; cell of hind-wing above (in the male) with long hairs. *M. apollo*.

The first, third, and fourth sections are readily distinguished, being small and easily defined groups; the first and third are but geographic modifications of a single widely-ranging form. The second section contains a number of widely dissimilar species, and may yet, for the purposes of systematic work, have to be divided

into several sub-sections ; in Australia these would be represented by *M. narcissus*, *M. ignita*, *M. delicia*, *M. meleagris*, *M. apelles*, *M. miskini*, and *M. elgneri*.

MILETUS APOLLO, Miskin, Annals Queensland Museum, No. 1, Supplement, 1891.

This particularly handsome species was provisionally described from a very poor male specimen (Miskin supposed it to be a female—both head and abdomen were missing) found by Mr. R. E. Turner between the leaves of a book, with some other butterflies from the Herbert River, Queensland. This damaged type (the remains of which are now in the Queensland Museum) was the only example known till in 1907 those in our possession were taken by Mr. H. Elgner. We now describe the female for the first time, and give fuller and more accurate details of the male ; even with the good specimens now available the extremely complicated pattern-scheme of the under-surface makes the description a difficult one.

Male.—Fore-wing : length of costa 20 mm. ; costa nearly straight ; apex acute ; termen and dorsum of equal length, straight. Hind-wing : produced to blunt teeth at veins 1, 2, and 3.

Above.—Fore-wing : orange-red ; apical area to costa at third and narrowly to tornus black. Hind-wing : orange-red ; cell and dorsal area between veins 1 and 2 covered with long hairs orange-red ; dorsum narrowly cream ; cilia orange-red, at veins 1, 2, and 3 black.

Beneath.—Fore-wing : dorsal half, extending just into cell, pale orange ; cell red, with two \cap -shaped cream marks upon a central black streak ; apical third, extending to two-thirds of termen and as a dark line only to tornus, reddish-brown ; a series of irregular sub-apical interneural marks cream ; a streak along upper edge of cell metallic ; a sub-terminal line of dots metallic. Hind-wing : apical two-fifths red-brown, shading towards costa to red ; tornal three-fifths cream, with obscure markings orange ; costa at base red, inwardly edged black ; a small streak on costa beyond base, and a spot on costa close to apex, cream ; three spots between cell and costa cream, basal one narrow, outer one larger, round, outer two edged black below ; a narrow band through cell, reaching middle of dorsum, scarlet ; a discal band from vein 6 to $1a$ at two-thirds scarlet ; these two bands edged black towards dorsum ; terminal band orange, with median line metallic and inner line black ; cream spots and scarlet bands sparingly edged metallic ; two spots in basal portion of cell, two in wide central portion of discal scarlet band, and one close to costal cream spot at apex, metallic ; all metallic lines and spots silver in some lights and pale blue or green in others ; cilia orange, at veins 1, 2, and 3 black.

Female.—Fore-wing: length of costa 21 mm.; costa more arched and apex less acute than in male; termen convex. Hind-wing: produced to very blunt teeth at veins 1, 2, and 3.

Above.—Fore-wing: reddish-orange (several shades lighter than the male); apical area broader than in male, extending further along costa, right to tornus, and one-fourth along dorsum, black. Hind-wing: reddish-orange; a sub-apical area from just below vein 6 to above vein 7 black; an irregular, obscure, interrupted sub-terminal band between veins 1 and 4 black; cilia reddish-orange, at veins 1, 2, and 3 black.

Beneath.—As in male, but slightly paler; cream areas a little broader; scarlet bands and metallic scalings a little narrower.

Four males and four females. Type male in collection Miskin, Queensland Museum; type female in collection Waterhouse.

Localities.—Cape York, Jan., Mar., May, June, Sept., Oct., Dec. Prince of Wales Is., June.

Miskin describes the colour as "wholly bright ferruginous." The male in some lights is almost vermilion; we consider orange-red, or orange-heavily-dusted-with-red, describes it accurately; abdomen, thorax, and head, as well as the clubs of the antennæ, are all this colour; the antennæ are brown, and more than half the length of the costa.

The male of *M. apollo* is of similar shape to the figure of *M. chrysargyra* of Grose Smith, but the colour and markings of that figure above are more like the female than the male of *M. apollo*; beneath, the two species are widely different.

MILETUS PANÆTHA, n. sp.

Male.—Fore-wing: narrow; length of costa, 16 to 19 mm.

Above.—Fore-wing: brilliant blue; costa and termen narrowly and apex broadly rich black; a central streak from near base along lower third of cell and beyond, but not reaching black termen, obscurely white. Hind-wing: brilliant blue; costa obscurely white, at base dull black; termen narrowly rich black; apical area between veins 6 and 7 rich black; abdominal fold obscurely white; cilia white, at veins black. Abdomen dull black, ringed white.

Beneath.—Fore-wing: creamy-white; sub-costal band and sub-apical broad band rich black narrowly edged metallic-green; costa, apex, and termen narrowly dull black; sub-terminal interrupted line metallic-green. Hind-wing: rich metallic-green, crossed by three oblique bands of rich black; first from base to vein 8 at half; second from dorsum at third to vein 6, thence to apex dull black; third from vein 1a at two-thirds to vein 4; a broad terminal band rich black, with a central broad line brilliant metallic-green; costa narrowly white; between first and second black bands a broader band from middle of cell to costa near apex white; cilia white, at veins black. Abdomen white.

Female.—Fore-wing: narrow; length of costa 20 mm.

Above.—Fore-wing: dull black; central fourth of wing white dusted at edges dull metallic-blue; base and dorsum dusted dull metallic-blue. Hind-wing: dull black; costa obscurely white, at base dull black; base and dorsum dusted dull metallic-blue; cilia white, at veins black. Abdomen dull black, ringed white.

Beneath.—As in male.

Nine males and two females. Types in collection Waterhouse; co-types in collection Lyell. We have presented a male to the British Museum.

Locality.—Cape York (Elgner), March, June, Sept., Nov., Dec.

This brilliant species is quite distinct from all other Australian *Miletus*. Superficially it is more like *Danis arinia* (Australian form of *D. cyanea*), but is much brighter blue above, and has larger green and black areas beneath.

M. panatha is the Australian representative of *M. theon*, of Felder, from Gilolo, one of the Moluccas Is. For comparison with our form we have to rely upon Druce's figure of *M. theon* ("Transactions Entomological Society, London," 1891, pl. xi., figs. 9, 10, male). According to this the male of *M. theon* above is a rather lighter blue; the dark margins are broader, especially at apex of fore-wing; the central white streak of fore-wing is larger, extending below cell; beneath the metallic-green areas are less extensive and the black bands more restricted; first black band is more oblique, reaching vein 8 before half; third is interrupted near centre; the white band widens considerably towards apex and *extends to dorsum*; the terminal black band is inwardly edged narrowly and obscurely white. The male of *M. hippuris* of Hewitson, from the Aru Is., as figured by Druce (*l.c.*, pl. xi., figs. 11, 12) is an allied form much paler blue above; beneath it has smaller areas of both black and metallic-green, and a consequently larger area of white; white band of hind-wing reaches dorsum; sub-terminal white line is present, and clearer than in *M. theon*. *M. theonides* (female) of Grose Smith and *M. carmen* (male) of Grose-Smith, both from Ron, New Guinea, we believe to be sexes of one species; in both the yellow and white band of hind-wing beneath extends to the dorsum. The male of *M. theophanes*, of Grose Smith (figured "Rhopalocera Exotica," 1895), from Humboldt Bay, New Guinea, has a purplish central area to both wings above, that of fore-wing enclosing the white streak, and narrower black margins; beneath the black bands of hind-wing are narrower; the second and third join towards the apex; the green dorsal portion of white band is replaced by a black spot. The male of *M. alix* of Grose Smith (figured "Rhopalocera Exotica," 1900), from Milne Bay, New Guinea, has no white streak on fore-wing above, and beneath the white area of hind-wing is larger and the green and black areas are smaller.

MILETUS ELGNERI, n. sp.

Male.—Fore-wing: length of costa 17 to 19 mm.; same shape as *M. ignita*, larger; veins 1 and 2 of hind-wing slightly more produced.

Above.—Fore-wing: dull purple (shining purple in some lights); costa narrowly, apex broadly, and termen narrowly and evenly brown-black; cilia brown, towards tornus narrowly whitish. Hind-wing: dull purple; costa and termen dark brown; dorsum brown; cilia narrowly whitish, at veins brown.

Beneath.—Fore-wing: ashy-brown, dorsal and tornal areas sometimes darker; upper half of cell and short bars from centre and at end of cell orange-brown; discal band from costa at three-fourths towards termen at two-thirds red-brown; discal band and cell area and bars narrowly edged brown-black, and sometimes faintly edged metallic-blue; a narrow sub-terminal line metallic-blue, inwardly edged near apex with three black dots. Hind-wing: ashy brown, with a series of red-brown spots as follows—2 on dorsum, 2 in interspace 1*a* (lower one concave outwardly), 3 in interspace 1 (lowest one concave inwardly and middle one elongate), 2 in interspace 2, 1 in interspace 3, an elongate spot across interspaces 4 and 5, 1 in interspace 6, 3 in interspace 7, a costal streak near base, 2 irregular elongate spots crossing cell and a third marking end of cell; these red-brown markings all narrowly margined brown-black, and sometimes faintly outwardly edged metallic-blue; inner sub-terminal line dark brown dusted metallic-blue; outer sub-terminal line metallic-blue; terminal line orange, with dark dots at veins, largest at vein 2.

Female.—Fore-wing: length of costa 17 to 20 mm.; termen more rounded than in male.

Above.—Fore-wing: brown-black; central area orange, shading at base and along basal half of dorsum to golden-brown. Hind-wing: golden-brown, towards costa brown; cilia narrowly whitish, at veins brown.

Beneath.—Fore-wing: central area orange; base and tornus brown; rest of wing grey; markings as in male. Hind-wing: grey; spots and markings as in male, but light purple-brown instead of red-brown; tornal area with heavier metallic-blue scalings.

23 males, 13 females. Types in collection Waterhouse; co-types in collection Lyell. We have presented a male and a female to the British Museum.

Localities.—Prince of Wales Is., May, June, July.

We have pleasure in naming this species after Mr. H. Elgner, whose efforts have resulted in the addition of several new *Lycænids* to the Australian list.

The male of this very distinct species is dull-coloured for a

Miletus; beneath the metallic markings are less conspicuous than is usual in the genus, and the red-brown spots of the hind-wing are also of a dull tone. The female, with its central orange area of fore-wing above, is a handsomer butterfly, at first glance recalling female *Ogyris ianthis*, or a larger form of female *Miletus hecalius*; beneath it is paler than the male, and the tints are more delicate.

M. elgneri may be readily distinguished from other species of the *M. ignita* section by the discal band of fore-wing beneath. Only in this species and in *M. narcissus* does this band run from the costa towards the tornus; the corresponding band in the other species of the section runs parallel with the termen. From *M. narcissus* it is abundantly distinct in size, colour, and markings.

MILETUS ERYTHRINA, n. sp.

Male.—Length of costa of fore-wing 15 to 16 mm.; shape as in male *M. ignita*.

Above.—Shining bluish-purple, shading to dull brown at margins; base of costa of fore-wing coppery; brown costal margin of hind-wing not (as in *M. ignita*) reaching sub-costal vein; terminal line brown-black, internally at veins 1, 2, 3, and 4 coppery; cilia whitish.

Beneath.—Stone-grey (much paler than in *M. ignita*); coloured spots and bands in same positions but distinctly smaller and more heavily margined metallic-green; costa cell and sub-terminal line of fore-wing orange (paler than in *M. ignita*); sub-terminal line of hind-wing orange (in *M. ignita* red); otherwise as in *M. ignita*.

Female.—Length of costa of fore-wing 14 to 16 mm.; shape as in female *M. ignita*.

Above.—Fore-wing: shining blue; base of costa coppery; costa and apex broadly dull brown; termen broadly and obscurely brown; bar at end of cell brown-black; terminal line brown-black; cilia whitish. Hind-wing: shining bluish-purple (paler and brighter than in male); costa broadly dull brown extending to sub-costal vein and along vein 7 to termen; terminal line brown-black, internally at veins 1, 2, 3, and 4 coppery; cilia whitish.

Beneath.—Paler than in male; red bands and metallic lines and margins brighter and broader than in male.

Three males and two females. Types in collection Lyell; co-types in collection Waterhouse.

Locality.—Port Darwin (F. P. Dodd), Feb., March.

This race of *M. ignita* is more clearly differentiated from the typical form than any we have yet seen. It is easily distinguished above by the narrower dark margins and the brighter purple of the male, and by the narrower dark margins, paler blue of the fore-wing, and the difference in the colours of the fore-wing and the hind-wing of the female. Beneath the ground-colour is a

grey rather than the brown of *M. ignita*, and the metallic margins of the coloured spots are much more conspicuous.

M. chrysonotus of Grose Smith ("Rhopalocera Exotica," 1899, pl. xlix.) described from a single female from Cooktown, is, in our opinion, but a slight variety of *M. ignita*; we have a female from Cape York and another from Kuranda, but no male has yet been taken, and that sex is needed to prove its identity with the typical *M. ignita*.

Typical *M. ignita*, according to the original description by Leach, has portions of the veins of the hind-wing marked with copper. The types came from the neighbourhood of Sydney, and the usual Sydney form is thus marked, though specimens with the copper absent are by no means uncommon in New South Wales and Victoria.

M. olliffi is evidently intended by Miskin to apply to that form of *M. ignita* in which the copper markings of veins are absent, but the locality of the type is unfortunately uncertain—"Newcastle, N.S.W., and Fremantle, W.A." The probable type (a male) is still in the Australian Museum, but is without a locality label; above it is of a slightly different shade of purple, has more clearly defined dark margins, and has an obscure bluish ternal patch on the hind-wing; beneath the ground colour is different, the spots are narrower, and the spot between veins 6 and 7 of the hind-wing is much nearer the termen; but the position of this spot is by no means constant in *M. ignita*. Pending further material from Western Australia we think it best to consider this specimen an individual aberration of *M. ignita*.

We have a male and a female from Brisbane that differ from typical *M. ignita* in being very highly coloured beneath. From Mackay we have two females much larger than, but otherwise almost identical with, *M. erythrina*, but here again we need the male to confirm our opinion. From Mackay we have a male, and from Sandgate a female, for which, in the absence of further examples, we hesitate to claim specific rank; they have the pale spots beneath very narrow, and the coloured sub-terminal band of fore-wing beneath is on the inner instead of the outer side of the sub-terminal interrupted line of metallic spots; they form a connecting link between the purple *M. ignita* and the bronze purple *M. epicurus*.

GEOLOGICAL MAP OF VICTORIA.—A new geological map of Victoria, on the scale of 16 miles to 1 inch, has just been issued by the Mines Department, at the nominal price of one shilling. Owing to the adoption of a larger scale, it has been possible to include more details than hitherto, hence the usefulness of the map is greatly increased.